# Foamed Antenna Support for Very Large Apertures, Phase II

Completed Technology Project (2009 - 2012)

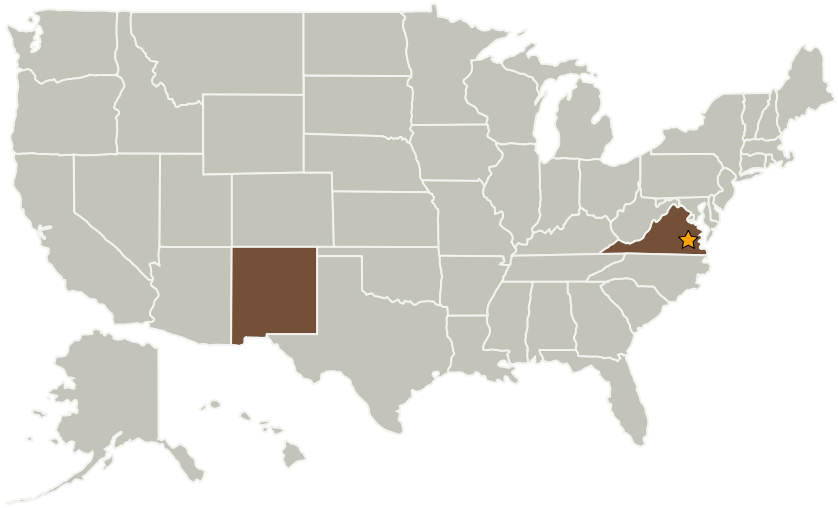
## Project Introduction

Large aperture antennas are of interest to NASA for applications in establishing high-speed communication relays for interplanetary missions. Design goals include 20 meter apertures. In order to minimize mission costs at these large diameters, weight must be severely restricted. Adherent Technologies, Inc. (ATI) has developed two technologies for ultra-light space structures and antennas, the Rigidization on Command

TM

(ROC) concept, uses UV-curing resins to stabilize inflated structures and a self-deploying foam antenna concept at small aperture. These technologies were combined in the Phase I program to produce a foam stabilized antenna with a ROC reflector surface. The areal density of the 0.6 m devise was 2.2 kg/m3. In the Phase II program, ATI will team with ILC Dover and Allied EM to develop the needed materials, design, manufacture, deploy, and test a 3 m Ka band antenna based on the foam stabilized inflatable technology. ATI will lead the materials development effort, optimizing the foam formulations and injection methods, as well as create a custom ROC resin for antenna applications. ILC Dover will manufacture the necessary inflatable mold, and Allied EM will be responsible for the RF design and testing.

## Primary U.S. Work Locations and Key Partners

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## Organizational Responsibility

**Responsible Mission Directorate:**

Space Technology Mission Directorate (STMD)

**Lead Center / Facility:**

Langley Research Center (LaRC)

**Responsible Program:**

Small Business Innovation Research/Small Business Tech Transfer

**Small Business Innovation Research/Small Business Tech Transfer**

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| Organizations Performing Work | Role | Type | Location |
|---|---|---|---|
| ★Langley Research Center(LaRC) | Lead Organization | NASA Center | Hampton, Virginia |
| Adherent Technologies, Inc. | Supporting Organization | Industry | Albuquerque, New Mexico |

| Primary U.S. Work Locations | |
|---|---|
| New Mexico | Virginia |

### Project Transitions

**September 2009:** Project Start

**March 2012:** Closed out

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

## Technology Areas

**Primary:**

- TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems
  - TX05.2 Radio Frequency
    - TX05.2.6 Innovative Antennas